AMENDMENTS TO THE CLAIMS

Please amend claims 1, 10, 12, 34, and 37, and insert new claims 65-67, as follows:

1. (Currently Amended) A method for irradiating a target, comprising:

establishing a relationship of the at least one marker relative to the target by determining a relative position between the at least one marker and the target;

generating an image signal of the at least one marker;

generating a tracking signal in response to the image signal; and

adjusting a radiation beam in response to the tracking signal to track the target;

wherein the target is tracked while performing an intensity modulated radiotherapy using a first multi-leaf collimator ~~in which~~, and wherein in the intensity modulated radiotherapy, a leaf of the first multi-leaf collimator is adjusted such that a first portion of the target receives more radiation than a second portion of the target.

2. (Previously Presented) The method as claimed in claim 1, wherein:

the step of generating an image signal includes generating an X-ray image of the at least one marker; and

the step of generating a tracking signal includes generating the tracking signal to track a movement of the target.

3. (Original) The method as claimed in claim 1, wherein the step of generating an image signal includes generating the image signal regarding an anatomy of a patient having a tumor as the target.

4. (Original) The method as claimed in claim 1, wherein the step of generating an image signal further includes the steps of:

illuminating the target and an area near the target with a first image beam; and

detecting a first image of the at least one marker formed by the first image beam.

5. (Original) The method as claimed in claim 4, wherein the step of generating an image signal further includes the steps of:

illuminating the target and the area near the target with a second image beam unparallel to the first image beam; and

detecting a second image of the at least one marker formed by the second image beam.

6. (Original) The method as claimed in claim 1, wherein the step of adjusting a radiation beam further includes the steps of:

superimposing the tracking signal on a radiation treatment plan; and

generating a beam adjustment signal using the treatment plan with the tracking signal superimposed thereon.

7. (Previously Presented) The method as claimed in claim 1, wherein the first multi-leaf collimator has a plurality of movable leaves arranged in two rows opposite to each other.

8. (Previously Presented) The method as claimed in claim 7, wherein the step of adjusting a radiation beam further includes adjusting the radiation beam using a second multi-leaf collimator having a plurality of movable leaves arranged in two rows opposite to each other and unparallel to the plurality of leaves of the first multi-leaf collimator.

9. (Previously Presented) The method as claimed in claim 1, wherein the step of adjusting a radiation beam further includes temporarily switching off the radiation beam in response to the tracking signal having a value indicating the target being outside an area.

10. (Currently Amended) A method for irradiating a target in an animal body, comprising:

establishing a relationship of at least one marker relative to the target by determining a relative position between the at least one marker and the target, the at least one marker being placed internally in the animal body;

generating an image signal of the at least one marker;

generating a tracking signal in response to the image signal; and

adjusting a radiation beam in response to the tracking signal to track the target;

wherein the target is tracked while performing an intensity modulated radiotherapy using a first multi-leaf collimator ~~in which~~ , and wherein in the intensity modulated radiotherapy, a leaf of the first multi-leaf collimator is adjusted such that a first portion of the target receives more radiation than a second portion of the target.

11. (Canceled)

12. (Currently Amended) An apparatus for irradiating a target, comprising:

a platform for supporting an object having a marker indicating a position of the target;

a radiation source, said radiation source generating a radiation beam toward said platform;

a beam adjuster between said radiation source and said platform, said beam adjuster comprising a first multiple leaf collimator;

a first image detector, said first image detector generating a first image signal of the marker; and

a control module coupled to said image detector and to said beam adjuster, said control module generating a beam adjustment signal for controlling said first multiple leaf collimator to track a movement of the target in response to the first image signal;

wherein said control module is configured to control said first multiple leaf collimator to perform an intensity modulated radiotherapy, ~~in which~~ and wherein in the intensity modulated radiotherapy, a leaf of the first multiple leaf collimator is adjusted such that a first portion of the target receives more radiation than a second portion of the target.

13. (Previously Presented) The apparatus of claim 12, said control module being further coupled to said platform and generating a control signal to move said platform in response to the first image signal.

14. (Previously Presented) The apparatus of claim 12, said first image detector including at least one device selected from a group of devices consisting of a video camera, an X-ray imager, a

magnetic field detector, an ultrasound sensor, a computed tomography imager, a single photon emission computed tomography imager, a magnetic resonance imager, a magnetic resonance spectroscopy imager, and a positron emission tomography imager.

15. (Previously Presented) The apparatus of claim 12, further comprising a gantry, said gantry housing said radiation source and said beam adjuster.

16. (Original) The apparatus of claim 15, said control module being further coupled to said gantry and generating a control signal to move said gantry in response to the first image signal.

17. (Previously Presented) The apparatus of claim 12, further comprising a first image beam source generating a first image beam toward said platform, said first image detector generating the first image signal by detecting the first image beam.

18. (Original) The apparatus of claim 17, further comprising:

a second image beam source, said second image beam source generating a second image beam toward said platform and unparallel to the first image beam; and

a second image detector coupled to said control module, said second image detector generating a second image signal by detecting the second image beam.

19. (Previously Presented) The apparatus of claim 12, wherein said first multiple leaf collimator comprised of a first row of movable leaves and a second row of movable leaves opposite to each other.

20. (Original) The apparatus of claim 19, said beam adjuster further including a second multiple leaf collimator between said first multiple leaf collimator and said platform and comprised of a plurality of movable leaves unparallel to said first row and said second row of movable leaves in said first multiple leaf collimator.

21-33. (Canceled)

34. (Currently Amended) A method for irradiating a target, comprising the steps of:

using an internal anatomy of a patient as a marker;

establishing a relationship of the marker relative to the target;

generating an image signal of the marker;

generating a tracking signal in response to the image signal; and

adjusting a radiation beam in response to the tracking signal to track the target;

wherein the target is tracked while performing an intensity modulated radiotherapy using a first multi-leaf collimator ~~in which~~ , and wherein in the intensity modulated radiotherapy, a leaf of the first multi-leaf collimator is adjusted such that a first portion of the target receives more radiation than a second portion of the target.

35. (Canceled)

36. (Canceled)

37. (Currently Amended) A process for irradiating a target in an animal body, comprising the

steps of:

collecting a plurality of images at a plurality of phases in a same physiological cycle, said plurality of images providing an indication of a location of the target relative to an internal marker;

creating a treatment plan based at least in part on the plurality of images collected at the plurality of phases in the cycle; and

delivering a radiation beam to the animal body according to said treatment plan;

wherein the radiation beam is delivered to perform an intensity modulated radiation therapy on a target of the animal body in which a first region of the target receives more radiation ~~that~~ than a second region of the target while the target is being tracked, the target being tracked and the radiation beam being delivered by adjusting one or more leaves of a multi-leaf collimator.

38. (Previously Presented) The process of claim 37, wherein said internal marker comprises an anatomical structure.

39. (Previously Presented) The process of claim 37, wherein said internal marker is implanted in the animal body.

40. (Previously Presented) The method of claim 34, wherein the image signal is generated using a camera.

41. (Canceled)

42-49. (Canceled)

50. (Canceled)

51. (Previously Presented) The method of claim 1, wherein the target is located beyond a head region of a patient.

52. (Canceled)

53. (Previously Presented) The method as claimed in claim 10, wherein the step of generating the image signal includes:

illuminating the target and an area near the target with a first image beam; and

detecting a first image of the at least one marker formed by the first image beam.

54. (Previously Presented) The method as claimed in claim 53, wherein the step of generating the image signal further includes:

illuminating the target and the area near the target with a second image beam unparallel to the first image beam; and

detecting a second image of the at least one marker formed by the second image beam.

55. (Previously Presented) The method as claimed in claim 10, wherein the step of adjusting the radiation beam includes:

superimposing the tracking signal on a radiation treatment plan; and

generating a beam adjustment signal using the treatment plan with the tracking signal superimposed thereon.

56. (Previously Presented) The method as claimed in claim 10, wherein the first multi-leaf collimator has a plurality of movable leaves arranged in two rows opposite to each other.

57. (Canceled)

58. (Canceled)

59. (Canceled)

60. (Previously Presented) The method of claim 64, wherein the target is tracked using an anatomical structure of a patient.

61. (Previously Presented) The method of claim 64, wherein the target is tracked using a marker externally placed on a patient.

62. (Previously Presented) The method of claim 64, wherein the target is tracked using a marker implanted within a patient.

63. (Previously Presented) The method of claim 64, wherein the position is determined using a camera.

64. (Previously Presented) A method for irradiating a target, comprising:

determining a position of the target;

tracking the target based on the determined position; and

delivering radiation to perform an intensity modulated radiation therapy on the target while the target is being tracked;

wherein the target is tracked by adjusting one or more leaves of a multi- leaf collimator, and wherein the radiation is delivered by further adjusting one of the one or more leaves of the multi-leaf collimator to modulate an intensity of the radiation delivered to the target such that a first region of the target receives more radiation that a second region of the target.

65. (New) The method of claim 1, wherein the leaf of the first multi-leaf collimator is adjusted for a first field.

66. (New) The method of claim 65, further comprising further adjusting the leaf of the first multi-leaf collimator for a second field.

67. (New) The method of claim 1, wherein the first portion comprises healthy tissue.